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CANADIAN PATENT

PUSHBUTTON LATCHING AND LOCKING ATTACHMENT

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Granted to Cutler-Hammer, Inc., Milwaukee, Wisconsin, U.S.A.

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No. OF CLAIMS 4

This invention relates to a pushbutton latching and locking attachment for pushbutton control devices.

To prevent unauthorized operation of electrical control systems, and to afford protection to maintenance and service personnel, provision is often made for locking of the "stop" button of the usual pushbutton station in depressed, circuit interrupting position. Because of the circuitry normally employed, this prevents operation of the control system. Locking devices for this purpose have taken many different forms and the majority are built into the cover of the pushbutton station. This requires manufacture of separate covers to provide non-locking and locking types.

It is a primary object of the present invention to provide a pushbutton latching and locking attachment which can be readily affixed to or detached from the enclosing cover of a pushbutton station without need for special tools.

A more specific object is to provide a device of the aforementioned character which can be secured to and removed from the cover of a pushbutton station by the insertion and removal of one of the cover securing screws, and which in pushbutton down latching position and securement of the padlock thereto blocks access to such cover screw or other fastening device by normally employed tools.

Other objects and advantages of the invention will hereinafter appear.

The accompanying drawings illustrate a preferred embodiment of the invention which will hereinafter be described in detail, it being understood that the embodiment illustrated is susceptible of modification in respect of details without departing from the scope of the appended claims.

*

In the drawings:

Figure 1 is a front elevational view of a pushbutton control device having a lockable latching attachment secured thereto in accordance with the invention;

5 Fig. 2 is like Fig. 1, but shows the latching attachment locked in pushbutton latching position;

 Fig. 3 is a fragmentary side view of a pushbutton device, showing a similar view latching attachment;

10 Fig. 4 is a sectional view taken along the line 4-4 of Fig. 2;

 Fig. 5 is a front view of the latching attachment, partially in section along the line 5-5 of Fig. 3;

 Fig. 6 is like Fig. 5, but shows the attachment in latching position;

15 Fig. 7 is a fragmentary isometric view of a pushbutton device showing the latch in an intermediate position; and

 Fig. 8 is an exploded view of the parts making up the latching attachment.

20 The drawing shows a pushbutton station comprising a metallic base or frame 10 having a U-shaped wrap-around cover 12 which is preferably formed of a molded insulating material. A dual momentary type switch 14 having separate actuators 14a and 14b is mounted on the inside of the base 10. Pushbuttons 16 and 18 are mounted in cover 12 and are biased outwardly thereof by springs 20. Integral projections 16a and 18a of the buttons
25 aline with the switch actuators 14a and 14b, respectively, and push the latter inwardly upon depression of the pushbuttons. Cover 12 is secured to frame 10 by the screws 22 and 24 which
30 penetrate openings in the front face of the cover and take into alined threaded openings in the integral downwardly and upwardly depending tabs 10a and 10b.

Screw 24 also secures to the front surface of cover 12 a locking latching attachment 26 which comprises the base 28, a latch 30 and a pivot pin 32. The base 28 has a portion 28a which seats against the indented front face of cover 12 and spaced apart portions 28b and 28c. As best seen in Figs. 5 to 8, portion 28b has a rectangular notch 28d and portion 28c has a padlock hasp receiving opening 28e extending through its top and bottom surfaces. Alined openings 28f and 28g extend transversely through the portions 28b and 28c with the latter being of somewhat larger diameter than opening 28b. Opening 28c extends across the diameter of hasp opening 28e.

Latch 30 has a central portion 30a and an integral button engaging arm 30b depending at an oblique angle from one end of the portion 30a, at the other end of portion 30a are spaced integrally formed lugs 30c and 30d having alined openings 30e and 30f. Pivot pin 32 extends through openings 30e and 30f with a force fit and through openings 28f and 28g with a sliding and rotational fit. The shoulder formed by the meeting of the portion 32a and portion 32b of somewhat smaller diameter seats against the outer side of the lug 30d. The transverse thickness of the portions 30a and lug 30c is slightly less than the width of the notch 28d. A flange 30g extends at a right angle from and along one edge of the portion 30a and merges with a surface of arm 30b and lug 30c.

As viewed in Figs. 5, 6 and 8, the attachment is assembled by inserting the lugs 30c and 30d of latch 30 in the notch 28d and space formed between one portion 28a and the inner side of portion 28a of base 28 with the openings 30e and 30f alined with the openings 28f and 28g. Pin 32 is then inserted from right through the openings 28g and driven into the openings

30f and 30e with a force fit so that the aforementioned shoulder on pin 32 seats against the right-hand side of the lug 30d. Pin 32 is straight knurled along the pairs of portion 32b that engage within the openings 30e and 30f of latch 30 to provide a non-rotational force fit of pin 32 in latch 30.

Portion 28a of base 28 has a screw receiving opening 28h to accommodate the screw 24. The ends of portion 28a are suitably notched so that the surface of the portion 28c will abut against the indented front surface of cover 12 when screw takes down into the threaded opening in tab 10b.

The free or non-latching portion of the attachment is illustrated in Fig. 1 wherein latch 30 is centered between portions 28b and 28c and having a bias downwardly under the force of gravity clear of pushbutton 18. If latch 30 and shaft 32 are rotated to the positions shown in Figs. 5 and 6 and the arm 30b pressed downwardly against pushbutton 18 until the lug 30c is alined with notch 28d, latch 30 and shaft 32 can then be slid to the left in the openings 28f and 28g to the positions depicted in Figs. 2 and 6. Latch 30 can then be released and it will stay in such position maintaining pushbutton 18 in depressed position. If the hasp 35a of a padlock 35 is inserted through opening 28e and locked as shown in Fig. 2, latch 30 will be locked in its pushbutton down, latching position. It will be observed that with the hasp 35a interposed in opening 28e pivot pin 32 cannot be driven to the right; its shouldered abutment against lug 30d prevents it being driven to the left.

It will be noted that in latched position that the lug 30d covers the greater portion of the head of the screw 24. As shown in Fig. 4, the clearance between lug 30d and the head of screw 24 makes it impossible to remove such screw in this

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position of the latch, assuming it is locked in such position. However, if the padlock is removed and latch 30 centered between the portions 28b and 28c and permitted to be pivoted by the outward movement of the pushbutton 18, screw 24 will then be
5 accessible for withdrawal as by the use of a screwdriver depicted in Fig. 7.

It will be apparent from the foregoing that use of the pushbutton latching and locking attachment of the present invention is simple, and that its design, within limits of deliberate
10 destruction, foils removal when placed in latched and effectively locked in such position by a suitable padlock. As is apparent from Figs. 5 and 6, the latch 30 can be locked in pushbutton latching position by padlocks having a wide range of hasp cross sectional diameters without the latch being slidable to the right
15 out of latching position.

THE EMBODIMENT OF THE INVENTION IN WHICH AN EXCLUSIVE
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. In a latching device for removable attachment to a pushbutton station or the like, a member comprising a base portion having a surface formed to seat against the outer surface of a station through which a pushbutton projects, an opening there-through to accommodate means to fasten said member in place on such station and second and third spaced apart portions projecting in substantial parallel alinement away from said base portion surface, said second portion having a notch opening toward said third portion, and said second and third portions having alined openings therein, a pin longitudinally slidable and rotatable in said alined openings, a latch member secured on said pin and having a portion which when rotated toward a pushbutton is engageable with the outer end to depress the latter, said latch member when holding said pushbutton in depressed position being movable into engagement with said second portion of said base in said notch as a result of sliding movement of said pin to latch the depressed pushbutton.

2. A latching device in accordance with claim 1, wherein said third portion of the first mentioned member has an opening extending therethrough transversely of and intersecting the first mentioned opening in such portion for receiving the hasp of a lock or the like, said pin having a length such that when in the pushbutton latching position it is clear of the last specified opening in said third member and when a hasp or the like is interposed in the latter opening being blocked against sliding movement sufficient to move said latch out of its pushbutton latching position.

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3. A latching device in accordance with claim 1, wherein said latch is formed so that when in pushbutton latched position access with normal tools to the device fastening means is blocked and withdrawal of the latter prevented and wherein when said latch is centered between said second and third portions of said base member and rotated a given distance away from the pushbutton ready access to the fastening means for its removal or initial insertion is afforded.

4. A latching device in accordance with claim 2, wherein the portion of said pin extending to one side of said latch is of larger diameter than the portion on which said latch is mounted, and wherein the shoulder on said pin formed by the junction of said pin portions seat against the latch and prevents the pin being driven out of said latch in the direction which said latch is moved to engage and latch with said member, said pin being prevented from being driven out of said latch in the opposite direction when a hasp is in the second mentioned opening in said third portion of said member.

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Fig. 1

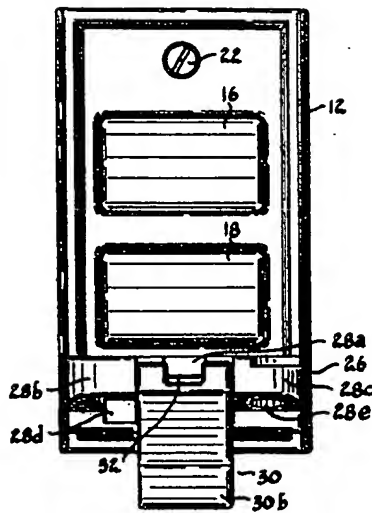


Fig. 2

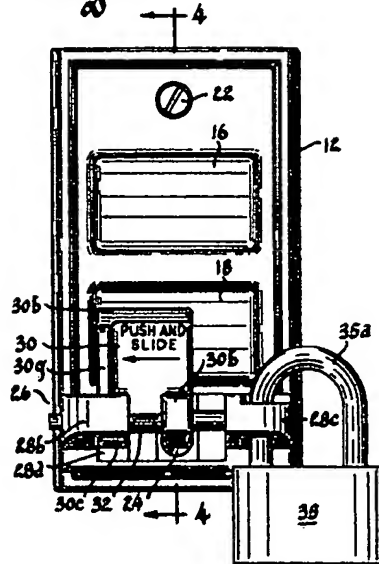


Fig. 4

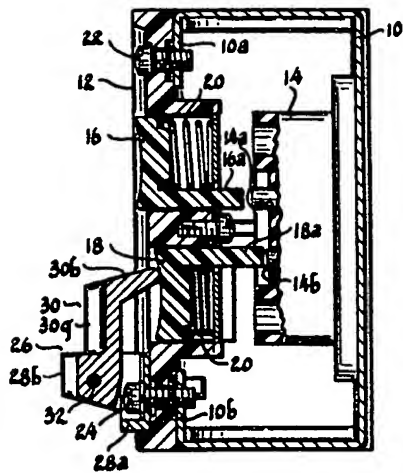
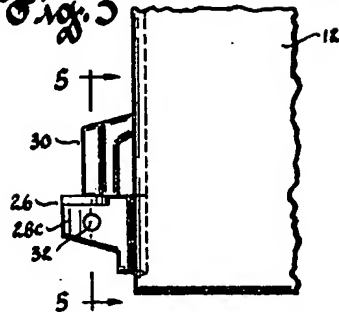


Fig. 3



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Fig. 5

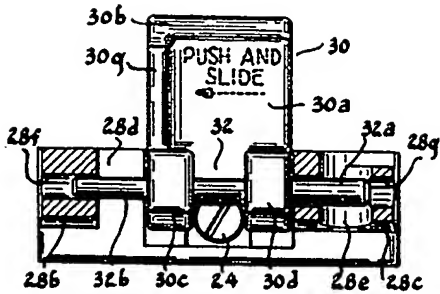


Fig. 6

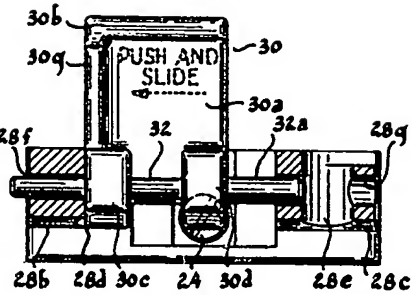


Fig. 7

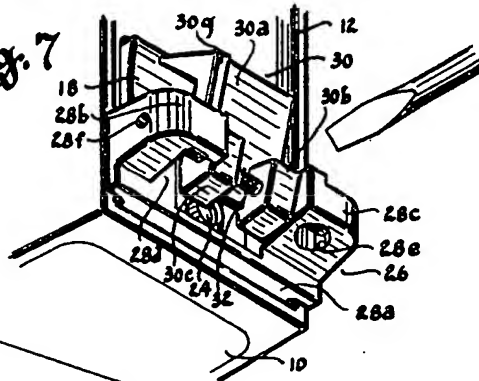
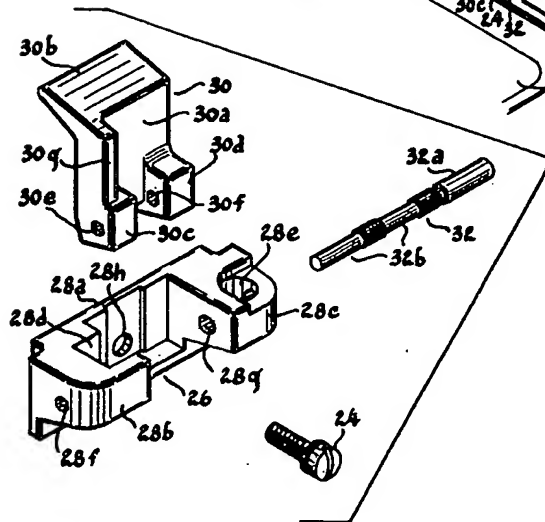


Fig. 8



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